UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/896,508	06/29/2001	Zhan He	REVEO-0120USAACN01	8116

26665 7590 05/04/2005

REVEO, INC.
3 WESTCHESTER PLAZA
ELMSFORD, NY 10523

EXAMINER	
TRAN, DZUNG D	
ART UNIT	**PAPER NUMBER**
2633	

DATE MAILED: 05/04/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/896,508	HE ET AL.	
	Examiner	Art Unit	
	Dzung D Tran	2633	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *09/09/2004*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-42* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-42* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 1, 2, 3, 23, 26, 29, 30, 31 and 33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hayee et al: (Hereinafter Hayee)(U.S. Pat. No. 6,714,724 B1) in view of Mabuchi et al. (JP patent Application 62-171351).

Regarding claims 1 and 29, Hayee discloses a free-space (col. 1, line 17) optical communication system (fig. 2), and method, comprising:

a transmitter (201) configured to encode and transmit over fiber or free-space(col. 1, line 17), information in at least two discrete optical carrier signals (col. 1,lines 25-29 and (col. 4, lines 14-21); and

a receiver (205) configured to receive and decode the information from said discrete optical carrier signals (col. 1 , lines 41 and col. 4, lines 37-47). Hayee further discloses discrete optical carrier signals include a first carrier signal and a second carrier signal;

said first carrier signal including information corresponding to logical I's, and

said second carrier signal including information corresponding to logical 0's. (col. 3, lines 47-55). The difference between Hayee and the claimed invention is that Hayee

does not teach to transmit the first optical carrier signal and the inversion signal in second optical carrier signal. Mabuchi teaches in Fig. 7 the transmitting station (1, 1', 2, 2') for transmitting a main signal and an inversion signal so that the pulse width at the receiving station is the same as the original pulse width as illustrated in Fig. 4. One of ordinary skill in the art would have been motivated to combine the teaching of Mabuchi in the system of Hayee, it would have been obvious to one of ordinary skill in the art to replace a transmitter of Hayee with the transmitters (one for generating the main signal and the other for generating an inversion) as taught by Mabuchi, because this approach reproduces faithfully the pulses at the receiving end without distortion and errors.

Regarding claims 2 and 30, Hayee discloses said transmitter is configured to encode digital information into at least two discrete optical carrier signals (col. 2, lines 36-38).

Regarding claims 3 and 31, Hayee discloses discrete optical carrier signals include a first carrier signal and a second carrier signal;

said first carrier signal including information corresponding to logical l's, and

said second carrier signal including information corresponding to logical 0's. (col. 3, lines 47-55).

Regarding claims 23 and 33, Hayee discloses transmitter is configured to transmit data using multiple data channel with multiplexer (610, see fig. 6) for multiplexing plurality of data channels into a single beam, each channel having first and second ones of discrete optical carrier signal', and demultiplexer (620) for

demultiplexing single beam into first and second ones of said discrete optical carrier signals (Hayee, col. 6, lines 53-65).

Regarding claim 26, Hayee discloses transmitter including multiplexer (60, fig. 16) to be configured to multiplex said multiple channels into a single beam.

3. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hayee et al. (U.S. Pat. No. 6,714,724 B1), as applied in the claim 1, in view of Mabuchi et al. (jp patent Application 62-171351) and further in view of Fukuda (U.S. Pat. No. 4,442,528).

Regarding claim 4, Hayee and Mabuchi fail to show transmitter being configured to communicate a logical 1 by transmitting a positive amplitude optical pulse at a first carrier wavelength and to communicate a logical 0 by transmitting a positive amplitude optical pulse at a second carrier wavelength. However, Fukuda discloses either logical level 0 and/or level 1 can be configured for communication by transmitting a positive optical pulse of the carrier signal (Fukuda, col. 4, lines 26-32). Therefore, it would have been obvious to one having ordinary skill in the art to encoding/modulating digital optical signal design logical 1 in corresponding to a positive optical pulse as taught by Fukuda into the first carrier wavelength of Hayee, and logical 0 in corresponding to a negative optical pulse (also by Fukuda) into the second carrier wavelength of Hayee, in order to encode the signal (with two discrete carrier signals). One would have motivated for doing this since it is capable of deciding easily whether absence of a signal pulse is due to any abnormal in the signal transmission line or due to one of the 2-level signal pulses (Fukuda, col. 6, lines 52-56).

4. Claims 5 - 8, 27, 32, 34 and 35 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hayee (U.S. Pat. No. 6,714,724 B1), as applied in the claims 1 in view of Mabuchi et al. (JP patent Application 62-171351) and further in view of Smith (U.S. Pat. No. 6,204,810 B1).

Regarding claims 5 and 6, Hayee does not clearly show transmitter is configured to transmit at least two distinct optical beams, each beam comprising at least one of said discrete optical carrier signals as recited in the claimed invention (claim 5), and receiver is configured to receive at least two distinct beams, each beam comprising at least one of said discrete optical carrier signals as cited in the claimed invention (claim 6). However, Smith discloses the limitations of the claimed invention (claims 5 and 6) (Smith, fig. 16, col. 18, lines 42-60). Therefore, it would have been obvious to one having ordinary skill in the art to configure the transmitter and receiver as taught by Smith into the system of Hayee and Mabuchi in order to transmit and receive two distinct optical beams. One would have motivated for doing this since it prevents interference that might occur in the transmission.

Regarding claims 7, 8 and 32, Smith also discloses a coupler (fig. 13) for coupling/multiplexing said optical signals (Smith, col. 14, line 35) and splitter for splitting/demultiplexing said optical signals (Smith, Col. 14, lines 40-42).

Regarding claims 27 and 34, Smith also discloses the method for multiplexing a plurality of data channels and demultiplexing said first and second beams into said first

and second optical carrier signals of said data channels (Smith, fig. 16, col. 22, lines 15-19 and Col. 23, lines 52-55).

Regarding claim 35, Hayee mentions multiplexing and demultiplexing comprising dense wavelength division multiplexing (DWDM) (Hayee, col. 1, lines 28-30).

5. Claims 9-13, 21, 22, 24, 25 and 36 are rejected under 35 U.S.C. 103(a) as being obvious over Hayee (U.S. Pat. No. 6,714,724 B1) in view of Mabuchi et al. (JP patent Application 62-171351).

Regarding claims 9-13 24, 25 and 36, Hayee discloses the system as described in the above section. Hayee fails to show the range of carrier wavelengths and the difference range between the carrier wavelengths as cited in claims invention (claims 9-13 and 36), and channel bandwidth as cited in the claimed invention (claims 24, 25). However, it would have been obvious to one having ordinary skill in the art at the time the invention was made to design or select the range of the wavelengths that satisfies user requirements, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. In re A 11er, 105 USPQ 233.

Regarding claims 21 and 22, the combination system of Hayee and Mabuchi as described, fails to show the transmitter and receiver comprising a member of the group of parts/devices that cited in the claimed limitations (claims 21 and 22). However, it would have been obvious to one having ordinary skill in the art at the time the invention was made to use devices to perform the tasks of the system, since it has been held that

a mere reversal of the essential working parts of a device involves only routine skill in the art. in re Einstein, 8 USPQ 167.

6. Claims 14-20 and 37, 38, 39, 40, 41 and 42 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hayee (U.S. Pat. No. 6,714,724 B1), as applied in the claims 1 and 29, in view of Mabuchi et al. (JP patent Application 62-171351) and further in view of Phillips et al. (Hereinafter "Phillips") (U.S. Pat. No. 6,072,994).

Regarding claims 14 and 37, Hayee discloses an optical communication system as described above. The modified communication of Hayee and Mabuchi does not clearly show transmitter is configured to change a carrier wavelength of each of said at least two discrete optical carrier signals. However, Phillips shows the frequency (wavelength) to be configured to change (Phillips, col. 21, lines 31-32). Therefore, it would have been obvious to one having ordinary skill in the art at the time of the invention to apply the teaching of Phillips on hopping (changing) frequency into the free-space optical system of Hayee in order to change a carrier wavelength of each of two optical carrier signals. One would have motivated for doing this to enhance security purpose (Phillips, col. 21 , lines 22-25).

Regarding claims 15, 16, 38 and 39, the combination system of Hayee and Phillips as described, fails to show the range of wavelength changing (limitations in claims 15 & 16), and the ratio of the changing (limitation in claims 38 & 39). However, it would have been obvious to one having ordinary skill in the art at the time the invention was made to design or select the range of the wavelength changing that satisfies user

requirements, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. In re A11er, 105 USPQ 233.

Regarding claims 17, 18, 40 and 41 Phillips discloses the changing of carrier wavelengths is in random manner (Phillips, col. 59, lines 14-15), or in programmed manner (Phillips, col. 67, lines 60-64).

Regarding claims 19, 20 and 42, control bits to be embedded into carrier signals including information for changing wavelength/frequency. (Phillips, col. 45, lines 6, 13).

6. Claim 28 is rejected under 35 U.S.C. 103(a) as being unpatentable over Miller (U.S. Pat. No. 5,608,722), in view of Hayee et al. (Hereinafter "Hayee") (U.S. Pat. No. 6,714,742) and further in view of Mabuchi et al. (JP patent Application 62-171351).

Regarding claim 28, Miller discloses a wavelength modulated communication system comprising:

multiple transmitters (see fig.1);

multiple receivers;

multiple user (ports) (26, 28), each including at least one of said multiple receivers, and

multiple hubs (22, 24) (col. 7, lines 7-8), each configured for transmitting and receiving data with at least two of said multiple user ports (col. 7, lines 8-10).

multiple repeaters (14, 16, 18, 20) each configured to receive, amplify, and route the optical signal to at least one member of the group consisting of other repeaters,

hubs, and user ports (col. 7, lines 8-10). Miller fails to show transmitter configured to encode information into at least two discrete optical carrier signals; and receiver configured to decoded the information from said at least two discrete optical carrier signals and transmitting station for transmit the first optical carrier signal and the inversion signal in second optical carrier signal. However, Hayee discloses transmitter to be configured to encode information into at least two discrete optical carrier signals (Hayee, col. 1, lines 49-56), and receiver to be configured to receive and decode the information from said at least two discrete optical signals (Hayee, col. 1, lines 56-62) and Mabuchi teaches in Fig. 7 the transmitting station (1, 1', 2, 2') for transmitting a main signal and an inversion signal so that the pulse width at the receiving station is the same as the original pulse width as illustrated in Fig. 4. Therefore, it would have been obvious to one having ordinary skill in the art at the time of the invention to employ the transmitter and receiver as taught by Hayee or Mabuchi into the communication system of Miller in order to encode information into at least two discrete optical signals and transmit to the receiver, wherein, the receiver receives and decodes the information from the at least two discrete optical carrier signals. One would have been motivated for doing this to reduce the wavelength spacing between the two adjacent wavelengths (Hayee, col. 1,lines 25-35).

7. Claims 1 and 29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hayee et al. (Hereinafter "Hayee")(U.S. Pat. No. 6,714,724 B1) in view of Kim et al., Reduction of cross gain modulation in the semiconductor optical amplifier by using

wavelength modulation signal, IEEE Photonics technology letters, Vol. 12, No. 10, October 2000.

Regarding claims 1 and 29, Hayee discloses a free-space (col. 1, line 17) optical communication system (fig. 2), and method, comprising:

a transmitter (201) configured to encode and transmit over free-space, information in at least two discrete optical carrier signals (col. 1,lines 25-29 and (col. 4, lines 14-21); and

a receiver (205) configured to receive and decode the information from said discrete optical carrier signals (col. 1 , lines 41 and col. 4, lines 37-47). Hayee further discloses discrete optical carrier signals include a first carrier signal and a second carrier signal;

said first carrier signal including information corresponding to logical l's, and said second carrier signal including information corresponding to logical 0's. (col. 3, lines 47-55). The difference between Hayee and the claimed invention is that Hayee does not teach to transmit the first optical carrier signal and the inversion signal in second optical carrier signal. Kim teaches in Fig. 1 the transmitting station for transmitting a main signal and an inversion signal (dummy signal) so that BER can be reduce at the receiving end. One of ordinary skill in the art would have been motivated to combine the teaching of Kim in the system of Hayee, it would have been obvious to one of ordinary skill in the art to replace a transmitter of Hayee with the transmitters (one for generating the main signal and the other for generating an inversion signal

(dummy signal)) as taught by Kim, because this approach reproduces faithfully the pulses at the receiving end without distortion and errors.

Response to Arguments

8. Applicant's arguments with respect to claims 1-42 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

9. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dzung Tran whose telephone number is (571) 272-3025.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's Supervisor, Jason Chan, can be reached on (571) 272-3022.

The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 305-3900.

Dzung Tran

12/23/2004

JASON CHAN
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600